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Towards a Joint Measurement of the ^{235}U Reactor Antineutrino Spectrum by Combining Multiple Reactor Experiments

The PROSPECT experiment uses a multi-ton liquid scintillator detectors to make a precision measurement of the ^{235}U spectrum from a research reactor.

Other experiments, like Daya Bay and STEREO, make similar measurements using complementary strategies and designs.

A combined analysis of the PROSPECT data with other measurements will improve over the sensitivity of the individual measurements, in particular with regards to the precision and sensitivity to spectral features.

This poster presents an analysis framework for evaluating the compatibility between the individual data sets and combining the measurements of multiple, independent experiments. By unfolding the measurements from the detected energy of events into true energy space, a measurement of the underlying ^{235}U reactor antineutrino spectrum can be made.

Sensitivity to spectral distortions from neutrino oscillations and non-standard physics is also explored.

Mini-abstract

Towards a joint measurement of the U235 antineutrino spectrum by PROSPECT and other experiments.

Experiment/Collaboration

PROSPECT

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